

SEAT NO. _____

No of printed pages: 02

SARDAR PATEL UNIVERSITY
B.Sc 5TH SEMESTER EXAMINATION 2018

5/4/2019 Friday
10.00a.m. to 1.00 p.m.

SUBJECT: MICROBIOLOGY US05CMIC01
FUNDAMENTALS OF MOLECULAR BIOLOGY

Total Marks: 70

Q-1 Attempt Multiple Choice Questions: Choose the Most Appropriate One.

(10)

1. Diameter of DNA helix proposed by Watson and Crick is
a) 34 A° b) 20 A° c) 3.4 A° d) 2 A°
2. This bond links two nucleotides in same strand of DNA double helix.
a) Hydrogen b) Phospho diester
c) Glycosidic d) Peptide
3. Pseudouridine is commonly found in _____
a) m-RNA b) t-RNA c) r-RNA d) All of these
4. Synthesis of DNA from RNA is mediated by
a) Reverse transcriptase b) DNA polymerase
c) RNA replicase d) RNA polymerase
5. Unwinding of double helix is initiated by this protein during replication.
a) Dna A protein b) Dna B protein c) Dna C protein d) Rep protein
6. RNA polymerase unwinds DNA strands at which site of strong promoter of *E.coli*?
a) -35 b) -10 c) -30 d) 10
7. Termination of transcription in *E. coli* involves which of the following protein?
a) ω (thita) b) α (alfa) c) δ (rho) d) σ (sigma)
8. Tailing of newly synthesized RNA in eukaryotes occurs
a) At the 3' end, with a poly(A) tail b) At the 3' end, with a poly(C) tail
c) At the 3' end, with a poly(G) tail d) At the 3' end, with a poly(U) tail
9. Which of the following step in elongation of amino acid chain during translation does not requires energy?
a) Translocation b) Peptydyl transfer
c) Binding of amino acyl t-RNA to A site d) all of these
10. Factor that prevents the 30S and 50S subunits from combining prematurely is
a) IF-1 b) IF-2 c) IF-3 d) none of these

(1)

(P.T.O)

Q-2 Attempt any ten (10) questions in short. (20)

1. Mention major differences of DNA and RNA
2. Draw structure of ATP
3. What are the functions of DNA gyrase and RNA primer in DNA replication?
4. Draw a well labeled structure of t-RNA molecule.
5. What is Klenow fragment?
6. Which living entities possess RNA replicase? Give examples.
7. What are introns and exons?
8. Draw strong promoter of *E. coli* and mention roles of important sites for transcription process.
9. What is the role of sigma factor of RNA polymerase in transcription process? When does it leave core enzyme?
10. What do you mean by degeneracy of genetic code? Give example.
11. Enlist major post translational modifications in newly formed polypeptide chain.
12. Draw prokaryotic ribosome with various subunits and sites.

Q-3 (A) Write note on: forms of DNA (06)

(B) Explain experiment of Hershey and Chase (04)

OR

Q-3 (A) Explain Watson and Crick model of DNA (04)

(B) Write a note on: m-RNA and t-RNA (06)

Q-4 Explain molecular mechanism of DNA replication in *E. coli*. (10)

OR

Q-4 (A) Explain experiment that proves semi-conservative nature of DNA replication. (06)

(B) Explain: Rolling circle model of DNA replication. (04)

Q-5 Discuss molecular mechanism of Initiation and Elongation of transcription in *E. coli*. (10)

OR

Q-5 (A) Write a note on Lac- operon in *E. coli* (06)

(B) Enlist post transcriptional modifications in newly synthesized RNA in eukaryotes and

Q-5 (A) explain any one in detail. (04)

Q-6 Write an essay on: Genetic code: its deciphering and features. (10)

OR

Q-6 Explain elongation and termination of Translation in prokaryotes. (10)

— X —
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